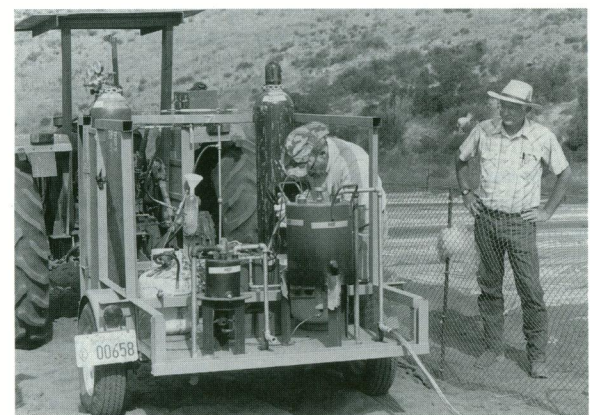


Though Hatch says that many of Wing's claims of impropriety in the 1990 assessment are "egregious," she agrees that further study is warranted. However, the small population around the plant and the long latency of many of the health effects of radiation make epidemiological studies difficult.

An Alternative to Methyl Bromide

Methyl bromide, with an estimated "ozone depleting potential" (ODP) of 0.65, falls into the EPA's Class 1 category of ozone depleters which consists of chemicals with an ODP of 0.2 or higher. Therefore, all production, importation, and use of the substance must cease by the year 2001 under the Clean Air Act. Researchers now say that methyl iodide may be an effective replacement for methyl bromide, currently the most widely used universal fumigant in the world.



Better than bromide. Plant pathologists Howard Ohr (left) and Jim Sims (right) use hot methyl iodide instead of methyl bromide to fumigate gladiolas.

In the United States, 80% of the methyl bromide used in 1990 was for agricultural purposes. The chemical was used mostly for soil fumigation, including the control of insects, nematodes, weeds, and plant pathogens, as well as for post-harvest, commodity, and quarantine treatments. The phaseout of methyl bromide is expected to have a major impact on U.S. agriculture, especially in California and Florida, where almost half of the nation's methyl bromide is used.

Finding a substitute for methyl bromide has been difficult because the chemical is used for a variety of purposes. Therefore, it is expected that several chemicals or combinations of chemicals will be used as replacements for methyl bromide in most applications.

Researchers at the University of California at Riverside have conducted several studies on methyl iodide for use as a soil fumigant, and have found it to be as effective

as methyl bromide and safer for the ozone layer. "The most important fact about methyl iodide is that it's not an ozone depleter because it will not reach the stratosphere," says Howard Ohr, an extension plant pathologist who is leading the research on methyl iodide at the University of California at Riverside. Ohr says methyl iodide is broken down by ultraviolet light before it can reach the stratosphere. It is estimated that methyl iodide remains in the atmosphere for four to eight days after use, while methyl bromide may remain for two years.

Another important factor is methyl iodide's effectiveness as a pesticide. "Methyl iodide has the same spectrum of kill that methyl bromide does," says Ohr. "In all our tests, methyl iodide is equal to or better than methyl bromide at killing organisms." In addition, Ohr says that at normal use temperature, methyl iodide is a liquid, making it safer for workers to apply than methyl bromide, a gas that can be toxic through inhalation.

However, there are some health concerns about methyl iodide. According to Ohr, methyl iodide has the same carcinogenicity as methyl bromide. Methyl bromide has been found to affect the respiratory system and nervous system, as well as cause genetic damage, such as birth defects. "With any harsh chemical there are drawbacks," Ohr says. "[Methyl iodide] has to be used with care and caution."

Some environmental groups are critical of the use of any chemicals as alternatives, encouraging, rather, the use of environmentally sustainable methods. "In the search for alternatives to methyl bromide, the consistent focus has been on finding a chemical silver bullet solution," says Kert Davies, an analyst for the Environmental Working Group, "but there isn't one." Davies says that not enough funds are being allocated to the search for sustainable methods. "What we need is creative, diligent research on nonchemical biological and cultural controls—long-term solutions," he said.

Ohr agrees that such alternatives would be ideal, but points out that they will not be developed and ready for implementation in the near future. "[Those sustainable alternatives] are not going to feed the world in the meantime," Ohr says. Methyl iodide is an effective soil fumigant that can be used in the interim until other alternatives are discovered, he says. Ohr says that many companies are interested in methyl iodide, and the next step will be for a company to buy the licens-

ing rights from the University of California at Riverside and register the chemical with the EPA. Ohr expects that the licensing will occur in the next six months, and the registration could take up to seven years.

The EPA is currently reviewing the literature and research on methyl iodide, says Bill Thomas, director of the EPA's methyl bromide program. "[Methyl iodide] looks efficacious—it looks like it does a good job of controlling pests," Thomas said, "but the jury is still out on the toxic information and the environmental fate."

Fran Squeezes the Life Out of NC Waters

After Hurricane Fran ushered in more than 8 inches of rain and wind gusts up to 100 miles per hour at some inland locations, investigators looked below the surface of the disaster to gauge the impact on eastern rivers and estuaries. What they found overwhelmingly were lifeless waters devoid of oxygen.

North Carolina was the state hit hardest by the September 5–6 storm, which toppled beachfront houses and leveled miles of protective dunes. Inland, some rivers rose 15 feet above flood stage at velocities expected to occur only once in 500 years, the U.S. Geological Survey reported.

After Fran, runoff to coastal rivers, tidal creeks, and estuaries created conditions of oxygen-starved water, the distribution and duration of which some researchers say they've never before witnessed. The deluge carried a dangerous mix of components: raw human sewage (diverted from wastewater treatment plants shut down by power outages), animal wastes, and runoff from farm fields and urban areas all requiring a quick fix of oxygen to decompose and break down. As a result, major river stretches experienced prolonged periods of anoxia—up to 3 weeks—which contributed to at least 40 reported fish kills, according to Jim Overton, acting assistant chief of the North Carolina Division of Water Quality's Water Quality Section.

Overton wasn't able to estimate the number of dead fish, but said kills included largemouth bass and sunfish, as well as catfish—bottom-dwellers that are fairly tolerant of poor water quality. Evidence of Fran's casualties was quickly swept away by high-velocity currents.

North Carolina shellfishermen along the central and southeast coast came up virtually empty for September, a prime month for hand-harvest of clams. Due to runoff containing high counts of fecal coliform (harmless bacteria that piggyback with insidious pathogens), some shellfishing areas remained closed up to a month, says George Gilbert,